DOCUMENT RESUME

ED 134 495 SO 009 715

TITLE	Personalizing Instruction in Business, Economics, and Related Subjects.
INSTITUTION	State Univ. of New York, Old Westbury. Empire State Coll. Long Island Learning Center.
SPONS AGENCY	New York State Council on Economic Education, Albany.
PUB DATE	76
NOTE	59p.
EDRS PRICE	MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS	*Business Education; College Curriculum; College Programs; *Contracts; Course Content; Course Descriptions; *Economics; Educational Objectives; Educational Philosophy; *Experimental Colleges; Higher Education; *Individualized Instruction; Program Content; *Program Descriptions; Program Design; Program Evaluation

ABSTRACT

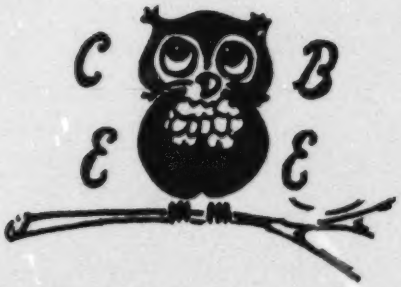
This paper describes the personalized instruction program for economic education at Empire State College, Saratoga Springs, New York. Personalized instruction is defined as relating subject content to the personal background, interests, needs, and abilities of the student. Students proceed at their own pace, use materials suitable to their individual abilities, and derive immediate practical value from academic work. Each student's degree program is developed with help from his faculty advisor. Courses, called contracts, could involve readings, writing tasks, projects, or related employment. Students work on one contract at a time and receive credits according to time involved. Various types of student evaluation are used; sometimes outside experts must be called upon to evaluate unusual contracts. In addition, at the end of each contract period a digest and evaluation are written which briefly describe the learning activities and the materials used. Examples of personalized contracts are supplied for basic economics, consumer economics, economic geography, labor economics, money and banking, women in the economy, poverty, energy, statistics, business and economic history, management, advertising and marketing, accounting, and business law. Little data is available so far to evaluate the program. An extensive bibliography of research in individualized, self-paced, and personalized instruction in economics is included. (ND)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED134495

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY



PERSONALIZING INSTRUCTION IN BUSINESS, ECONOMICS, AND RELATED SUBJECTS

by the

Center for Business and Economic Education
Empire State College
Long Island Regional Learning Center
Old Westbury, New York

1976

Published with the assistance of the

New York State Council on Economic Education
State University College
Geneseo, N. Y.

SO 009 715

Introduction

There appears to be a growing interest in attempts to relate instruction in economics, business, and related subjects to the background, interests, needs, and abilities of the individual student. These efforts take a variety of forms. One is self-paced instruction. Student "A" may be exposed to the same material as student "B," but is permitted to work faster or slower. The value of this is obvious. The student who can master the subject (or a portion of it) sooner than others is not held back, while the student who is having difficulty is not forced to move at an uncomfortable pace. Programmed textbooks and "self-study" guides are often used. While self-paced instruction is employed at Empire State College, when we speak of personalizing instruction we mean something more.

Individualized instruction is often used synonymously with personalized instruction. For our purposes, however, let us make a distinction. Let us agree that individualized instruction implies that student "A" is exposed to the same content as student "B," but not necessarily using the same materials or methods. For example, suppose that "A" is using a basic economics textbook which is employing a problems approach, while "B" is using a text with a social-philosophic approach.* Both books cover pretty much the same economic concepts, principles, and facts, but with different approaches. In

---

* For examples of basic economics textbooks using different approaches, see Laurence E. Leamer and George G. Dawson, Suggestions for a Basic Economics Library (New York: Joint Council on Economic Education, 1973), pp. 16-19. Also see Laurence E. Leamer, A Guide to the Selection of College Introductory Economics Textbooks (Binghamton: State University of New York, 1972), mimeographed.

one sense, this is individualized instruction because students are permitted to use textbooks or other materials of their own choosing. Individualized instruction can take a great many forms, and there can be elements of it in conventional lecture-discussion courses. Allen Kelley's "Teacher Information Processing System" (TIPS) is a case in point.* Some research has been done on the effectiveness of self-paced and individualized instruction. A few researchers claim to have found that students learn more (as measured by standardized economics tests) this way, while others have found no statistically significant difference between experimental and control groups.** It does seem clear, however, that the self-paced and/or individualized approach can be as good as -- if not better than -- the conventional lecture-discussion method. Individualized instruction is widely used at Empire State College.

Let us arbitrarily define personalized instruction as that which relates the subject (or subjects) being studied to the personal background, interests, needs, and abilities of the student. It incorporates self-paced and individualized instruction as we have defined it, but adds another dimension. The students not only proceed at their own pace, using materials suitable for their individual abilities, but they derive some immediate practical value from their academic work. This is not to suggest that students studying basic

---

* Allen Kelley, "An Experiment with TIPS," American Economic Review, May, 1968. Also see Kelley's articles in The Journal of Economic Education, Spring, 1973, and the American Economic Review, May, 1972.

** For a summary of research findings see Elisabeth Allison, "Self-Paced Instruction: A Review," The Journal of Economic Education, Fall, 1975.

economics confine themselves to material that applies very directly to their roles as consumers, workers, businesspersons, or whatever. Indeed, "social economics" ought not to be ignored in favor of "personal eccnomics," because we are all in some way involved in nearly every economic problem of a general nature. For instance, the individual whose job is safe should understand the problem of unemployment in order to be able to take an informed stand on public policy proposals designed to deal with the situation. People must also be taught to see their personal economic interests in the context of regional, national, and world economies. Furthermore, we are not implying that purely descriptive economics replace the theories, principles, and analytical tools which are found in conventional textbooks. On the contrary, the basic concepts, theories, and principles can become instruments the student uses in analyzing and understanding specific real-life problems and situations in which he or she has a particular interest.

It has been argued by some college teachers of economics that one cannot mix economic theory with a study of applied economics. First, we are told, the student must study the theories and principles, uncontaminated by any attempt to relate those concepts to the realities of life. Then, if the student wants to know what all of this has to do with the price of beans, let him or her enroll in a course in "Current Economic Problems," "Applied Economics," or the like. There simply isn't time to cover the 900 or more pages in the textbook and still try to deal with current problems. Unfortunately, however, many students "have had it" after their two-semester

(or even one-semester!) course in basic principles. They don't want to go near an economics classroom again! This booklet is based upon the notion that the instructor who takes the trouble to relate basic theory to real-life problems will not be "cheating" the students out of the opportunity to learn about the beauties of the IS-LM curve, the coefficient of cross elasticity, or the cob-web equilibrium. Rather, the study will assume real meaning for the student. Economics will be seen as a practical instrument to help cope with life's difficulties, not as an abstract and dismal science used by economists to amuse one another and to baffle the lay public. Indeed, some researchers have found that students learn more economics (as measured by standardized tests of economic understanding) -- or at least as much as in the "pure" theory course -- if the instructor relates the basic concepts to realistic problems of interest to the class.*

In describing personalized economics instruction at Empire State College, we recognize that it is not possible for many instructors in conventional institutions to replicate our mode of teaching. Nevertheless, the basic principles should have widespread application, and perhaps some of the ideas set forth in this booklet can be adapted to the more traditional setting.

In the next section we give an overview of the Empire State College approach.

---

* For example, see Richard Leftwich and Ansel Sharp, "Syllabus for an 'Issues Approach' to Teaching Economic Principles," The Journal of Economic Education, Special Issue No. 1, Winter, 1974. After experimenting with an issue-oriented principles course at Oklahoma State University, Leftwich and Sharp concluded that the experimental course was not inferior to the traditional principles course and that students preferred the former.

Educational Methods at Empire State College: An Overview

Those already familiar with Empire State College (ESC) can skip this section, but others might benefit by seeing how we approach the teaching task in general. ESC was established in 1971 as part of the State University of New York system. It was intended to provide students with alternative modes of instruction, and to enable people to earn undergraduate degrees without adhering to conventional college schedules. ESC recognizes that one can reach the top of the hill by many different paths, and that what is "right" for John Jones is not necessarily the best for Sally Smith.

The College grew rapidly during its early years, appealing largely to mature people (35 is the average age of ESC students), many of whom find it virtually impossible to attend traditional college classes because of some job or life situation. Thus, pilots, nurses, police officers, businesspersons, mothers unable to afford babysitters, people house-bound because of handicaps, and even prisoners make up the ESC student population. Most have already had some post-high school work, usually in a community college. They tend to have fairly well-established goals and to be highly motivated. Most of the students have jobs, and many have already enjoyed considerable success in their fields.

There is no prescribed curriculum for any student. Each student's degree program is individually tailor-made, taking into account prior learning (informal as well as formal), interests, and needs. The student's degree program is developed with the help of his or her mentor (faculty members are called mentors), but must be

approved by an associate dean, by an Assessment Review Committee at the regional learning center where the student is enrolled, and finally by the office of the Academic Vice President at ESC's headquarters in Saratoga Springs. Although sometimes tedious, this process is designed to ensure that the program is logical, meets high academic standards, contains sufficient work in the liberal arts and in the student's area of specialization, and so on.

Courses taken at other accredited colleges present few problems, and are usually accepted toward the student's degree at ESC as long as the grades are "C" or above, and as long as they somehow fit into that individual's degree program. In addition, however, Empire State College will grant credit for college-level learning that was acquired through some sort of life experience. It is incumbent on the student to prove that the experience did occur, and to establish that he or she did acquire college-level learning. This is by no means automatic, nor is it usually easy. The student must present a portfolio containing a general essay in which he or she gives a detailed explanation of the experience, precisely what was learned (and at what level), how the experience fits into the degree program, and the like. Documentary evidence must be included in an appendix to the general essay. To support these claims for life-learning, students may submit letters from responsible persons who were in a position to assess the learning experience, certification indicating that learning occurred (as in the successful completion of a formal course), or scores on a standardized examination.

Faculty members who are expert in the field in question may meet with a student for what is, in effect, an oral examination. Again, an associate dean, the Assessment Review Committee (made up of faculty members and evaluation specialists), and the office of the Academic Vice President will take a hard look at these claims. Experts outside the College are often called upon to help assess a claim for life-learning. Months may be spent in seeking answers to questions of the following type:

> Did the learning experience actually occur as claimed?
>
> Precisely what did the student learn?
>
> Was the learning actually college-level learning? If so, should it be considered upper-division or lower division?
>
> Did this experience duplicate or overlap some other learning experience? (For example, if a student took a college course in business management and also asked for credit because he or she had had managerial experience, the claim for the life-learning would not be granted unless the student could establish that the life-learning was at a higher level or was substantially different from that obtained through the formal course.)

Prior learning may account for as much as 80 percent of the student's degree program. In other words, about 20 percent must be done at Empire State College -- or at least six months of study for a full-time student. In practice, it is very difficult for a student to obtain a degree in only six calendar months.

Study at Empire State is undertaken through individualized student learning contracts. There is a prescribed format for these contracts, but otherwise they allow for tremendous variation and flexibility. (The next section contains a sample contract.) The first section of the contract is a very brief statement of the

student's general purposes or long-range goals. For example: "Ms. Halsted plans to earn a B.S. degree with a concentration in business management, in order to increase her knowledge of business administration, and possibly to qualify for higher positions in her current place of employment, to obtain managerial positions elsewhere, or to enter graduate school." This helps to place the remainder of the contract in perspective. In the second section, the specific purposes of this contract are set forth. For instance: "The student plans to learn basic microeconomics and macroeconomics, equivalent to that usually taught in a two-semester course in a conventional college." The third section gives the detailed learning activities that will occur. Books to be read, papers to be written, and projects to be completed will be described. Here we are not only told what the student will learn, but how. Finally, there is an evaluation section which indicates how the mentor will determine what the student learned, and how well it was learned. Often, a bibliography will be appended to the contract. The student has some input in the writing of the contract, and knows what the objectives are, how they are to be achieved, and how the learning will be measured or evaluated.

Students work on only one contract at a time. If a contract covers basic economics, for example, the student will study nothing else until that contract has been completed. Thus, the student does not have to divide his or her time among several different subjects, but can concentrate all energies upon one. The contract specifies the amount of time to be spent on this particular study, giving starting and ending dates. The amount of credit to be earned

is also indicated.

At this point we must introduce the unusual ESC credit system. Our credits are called "months," an unfortunate choice of terms because the uninitiated reader will confuse our credit months with the months in the Gregorian calendar. The full-time student who successfully completes a four-week contract has earned one ESC month. A half-time student, on the other hand, would study for eight consecutive weeks to earn one ESC month. (See how easy it is?) The full-time student is expected to devote about 40 hours per week to his or her studies, while the half-time student is expected to study for about 20 hours per week. One ESC credit month is the equivalent of four credits in the conventional college. Consequently, a student with 80 transcript credits from prior college learning will receive 20 ESC months of credit for that experience. We simply take the number of transcript credits and divide by four.

Now, flexibility is the name of the game. Suppose that a student finds it impossible to complete the work of the contract by the agreed-upon terminal date. Additional time will be granted, but this does not imply additional credit unless more work is included. A contract can also be amended to include more (or less) work, to change the activities originally included, to make it worth more (or less) credit, and so on. This makes it possible to change a textbook that proved to be too difficult or too easy, to take advantage of unforeseen opportunities (such as an in-service course being offered in the student's company), to revise a project that

proved to be infeasible, etc. There are no semesters at ESC, so students may enter and leave at almost any time. If an emergency arises during the course of a contract (such as an illness or serious personal problem) the student may formally withdraw, and re-enroll when ready. In most conventional colleges the students would be required to start the courses over again, but at ESC they can pick up where they left off.

What kinds of activities can be included in a contract? Almost any activity that would achieve the goal of the contract can be included. Remember, however, that there is a hard-nosed associate dean reading every contract, and no contract is official until it has an associate dean's approval. Thus, contracts that are vague, badly worded, granting too much credit for the work described, or in other ways deficient, are returned by the associate dean for revision. Some contracts contain activities which, in effect, replicate conventional courses. The only difference is that the student is not actually attending classes (although this can be arranged also). For example, in an introductory economics contract the student might be required to read a standard two-semester textbook, complete all the problems and exercises in a workbook, write a term paper (although we don't have "terms" we do have term papers), and take the Test of Understanding in College Economics* at the end. From time to time the student will meet with the mentor for advice and guidance, and for help with the most

---

* This standardized test covers basic macroeconomics and micro-economics. It is sold by the Joint Council on Economic Education, 1212 Avenue of the America, New York, N.Y. 10036.

difficult concepts, but otherwise he or she works independently. There is nothing particularly wrong with such a contract, if it achieves the goal and if it is "right" for that particular student.

On the other hand, however, there are so many ways of acquiring knowledge and understanding that we ought not to overlook opportunities for more imaginative modes of instruction. Thus, a television series, if appropriate, can become part of the contract. On-the-job experiences can be included, if they result in the type of learning needed. Community work and even hobbies can be valuable learning experiences. Some of the educational programs and courses offered by employers are as good as anything found in a prestigious college. (Indeed, several of the courses offered to employees by one of the major firms on Long Island are recognized for college credit by some universities.) Students may engage in practical projects which help to teach them what they need to know while they are actually doing something productive. In fact, one of the thrilling things about teaching at Empire State College is that we so often see our students using their new-found knowledge right <u>now</u> -- we do not have to hope that they will find some use for it five years hence.

Do students miss the contact and interaction that conventional classes provide? To a certain extent they do. To compensate for this, we often have <u>group studies</u>. Seminars, workshops, and conferences are held from time to time, enabling students to meet and to share ideas, experiences, and learnings. In fact, these are sometimes planned and conducted <u>by</u> students. These group activities

can be included as part of a learning contract. In 1974, for example, a week-end seminar on inflation was held at the Long Island Center of Empire State College. This attracted a large number of students, many of whom attended because they were interested in the problem, not because they would receive credit for the experience. Finally, students can take regular courses in other colleges. Through cross-registration agreements, ESC students can enroll in appropriate courses, with Empire covering their tuition if they go to another college within the New York State University system, and part of their tuition if they go to a private school. Many correspondence courses are available as well. Students have obtained ESC degrees without ever leaving their homes, and some work toward degrees while living in other parts of the world.

The student-mentor relationship is also flexible. Students meet with their mentors as often as necessary. Sometimes it is sufficient to communicate entirely by mail or telephone, at least after the contract has been written and before it is completed. It is not necessary to meet in the mentor's office -- any mutually convenient place will do. Thus, students' homes, mentors' homes, public libraries, and even ice-cream parlors have served as meeting places. ESC does not need to acquire and maintain expensive buildings, for classroom space is not needed at all. Thus, while the Empire State faculty member may deal with only about 24 full-time students (or possibly twice that number if he or she has half-time students), the per student cost is actually lower than in conventional colleges.

Various means are used to evaluate the student's contract learning. Formal tests are not popular, but mentors can evaluate written work by the usual methods, assess the educational value of practical projects, and determine how much the student learned through personal discussions. Outside experts are used from time to time, as in cases where tutors are hired to help individual students. (If a student has a particular need that cannot be met by one of the regular faculty members, ESC will hire a tutor. The ESC mentor does not relinquish control over the contract, however, but remains responsible for its successful completion and for supervising the work of the tutor.)

At the end of the contract period, the mentor writes a formal Digest and Evaluation, summarizing what was done by the student, explaining the evaluation process, and then giving a detailed account of what the student learned. Weaknesses and deficiencies are pointed out as well as strengths, and the mentor may identify needs for further work and study. This is the equivalent of a transcript in a conventional college. It does not contain a letter grade or a numerical score. We think it is more meaningful, however, for letter grades and numerical scores often say very little (if anything) about what a student learned.

How effective is the Empire State College system? The safest answer is that "the jury is still out." Empire has been accredited by the Middle States Association, and our students do not seem to have much difficulty in being admitted to graduate schools. Our programs are constantly being reviewed and reevaluated, however,

and we do not wish to make exaggerated claims for success. Some students thrive in this system; others find it unsuitable. There is a kind of "self-selection" process, in that the weaker students who cannot work independently tend to drop out. As in any college, the work of some individuals is barely adequate. Many, however, produce almost unbelievable work of high quality. For example, one of our students doing a one-month contract in introductory economics read a basic principles textbook, did all the problems in a 300-page workbook, and submitted a paper of 140 typewritten pages -- single-spaced! Another submitted 34 short papers (of from five to twelve handwritten pages) during the course of a two-month introductory economics contract, relating the textbook material to current economic issues and problems. Although his contract did not call for it, he also read Keynes's General Theory of Employment, Interest and Money. A third, in a one-month contract in introductory economics, did a paper on "The Use of Regression Analysis in Economics Research." Admittedly, these are unusual students, even for a College that tends to attract mature, highly motivated individuals.

In the next section we describe some actual contract work, showing how the conventional textbook material can be related to student needs and interests.

Examples of Personalized Instruction

In this section we describe some of the contract work students have done at Empire State College, relating that work to personal interests and needs. From time to time we shall suggest ways of incorporating these ideas into the more conventional classroom structure. First, however, we set forth the underlying philosophy of our approach through the medium of verse.

ON TEACHING ECONOMICS AT EMPIRE STATE COLLEGE

We teach our economics with a lively topicality,
And never never use the term "Pareto optimality."

Our student priests may calculate the cost of giving unctions;
They never waste their time debating transcendental functions.

Taussig's tomes on tariffs are only treated transcendentally,
For student interest wanes, unless they're fully with us mentally.

We make a lot of noise about the horrors of inflation,
But leave it to the Hansenites to fret about stagnation.

Production possibilities provide some pretty curves,
But cobweb equilibria just get on student's nerves.

Predatory practices and price elastic policies,
Arouse our students' interest in pressure groups and polities.

But loudly they resist our deep concern with Pigou's pap,
And dogmatically denounce our damned deflationary gap.

They tell us that our Phillips curves are optical illusions,
And if we try to teach them we'll be covered with contusions.

Factor substitution may deeply interest many,
But as for Eurodollar bonds -- not <u>one</u> would spend a penny.

And can a student's needs be adequately served,
If we inflict upon him the isoproduct curve?

Indeed, we risk creating some incurable paralyses,
If students are required to make those isoquant analyses.

These mortals may all suffer from diseases apoplectic,
If down their throats we cram confusing modes econometric.

In short, our teaching process has a multiple effect,
When student needs and interests are treated with respect!

Having completed that bit of foolishness, let's get down to business. In the following sub-sections we describe ways of relating economics, business, and related subjects to the individual's needs and interests. These are actual cases, but student identity is not revealed.

Basic Economics

Mr. "L" is a pilot with an air transport firm that services business firms through charter flights. Mr. "L" also has minor managerial responsibilities, but wishes to obtain a B.S. degree in business in order to improve his chances of promotion or of obtaining a managerial position in another air transport company. He has had over a year of successful study in a conventional college, and his credits will be accepted toward his degree program at Empire State. Because he has an irregular work schedule, Mr. "L" cannot attend a conventional college. Nevertheless, he has plenty of time to study -- often finding himself with many hours to "kill" between flights.

After reviewing the student's transcript and discussing his career plans with him, the mentor suggested the study of basic economics for two ESC months (the equivalent of a two-semester course). A contract was drawn up. This contract, with the identities of the student and faculty members obliterated, appears on the following pages. Note that this contract is not being offered as a

[continued on page 21]

Empire State College Learning Contract

STUDENT'S NAME (TYPE LAST NAME FIRST)	SOCIAL SECURITY #	CONTRACT #
ADDRESS	CONTRACT BEGINS ON: 9/30/74 / CONTRACT ENDS ON: 1/31/75	FULL TIME / HALF TIME x
TELEPHONE: HOME WORK	FOR PERIOD OF 2 MONTHS	EXTERNAL RESOURCES
MENTOR'S NAME (TYPE LAST NAME FIRST): DAWSON, Dr. George G.	LEARNING CENTER/UNIT: Mooney Pond Satellite, Selden, LI	

Give detailed description of: (a) Student's General Purposes, plans, or aspirations; (b) Specific Purposes of this Contract; (c) Learning Activities to be undertaken and schedule by which they will be pursued; and (d) methods and criteria for Evaluation. Use the underlined as headings for the four sections of the Contract, and attach additional pages as necessary.

(A) General Purposes -- Long Range Goals

Mr. L long range goal is to obtain a degree in business administration in order to be better prepared to carry out his present duties (he is in a managerial position with an air transport firm) or to obtain an administrative position with another firm in the air transport industry. Mr. L is an experienced pilot and flight instructor, but feels he needs more formal preparation in managerial subjects.

(B) Specific Purposes of this Contract

Mr. L plans to study basic economics (both macroeconomics and microeconomics) and to apply economic concepts and principles to the problems of managing firms in the air transport industry. It is expected that a knowledge of economics will help Mr. L to become more effective as a citizen-consumer as well as having practical value in operating air transport companies.

(C) Learning Activities

For a learning experience that will be at least the equivalent of a two-semester course in Principles of Economics, Mr. L will do the following:

1. Read the entire textbook INTRODUCTORY ECONOMICS by Sanford Gordon and George Dawson (D.C. Heath, 1972).
2. Read the STUDY GUIDE TO ACCOMPANY INTRODUCTORY ECONOMICS and do all of the exercises contained therein.
3. Read the COLLEGIATE GUIDE TO ECONOMICS: BOOK I (G. P. Putnam's Sons) which stresses macroeconomics, and take the tests contained therein.
4. Read the COLLEGIATE GUIDE TO ECONOMICS: BOOK II (G. P. Putnam's Sons) which stresses microeconomics, and take the tests contained therein.
5. Use the textbook ECONOMICS: AN INTRODUCTION TO ANALYSIS AND POLICY by G. L. Bach (Prentice-Hall) or a similar text if it

Use this form as the first page of each learning Contract. When signed, the original copy is to be filed in the student's Learning Center File; send one copy to the Vice President for Academic Affairs in Saratoga Springs.	SIGNATURES	DATE
	STUDENT	9/30/74
	MENTOR George G. Dawson	9/30/74
	ASSOC. DEAN	10/22/74

11/73

becomes necessary to supplement the above listed books on any given topic or concept.

To apply basic economic concepts, principles. problems, facts, and issues to the air transport industry, Mr. L will do the following:

1. Read Ernest W. Williams, editor, THE FUTURE OF AMERICAN TRANSPORTATION (Prentice-Hall, 1971) to get an overview of the economics of transportation in general.

2. Write a paper in which the material contained in the economics texts is related specifically to corporate aviation and/or to the air transport industry in general or some other sector of that industry. For example, as Mr. I studies the law of demand he will address himself to the question: "How does the law of demand apply to the demand for air services by corporations?" As he reads the chapters dealing with production costs, he will try to determine the extent to which the costs of providing air transport are fixed or variable, for instance, and will identify factors affecting those costs. After learning about the business cycle in general, he will ask: "How is the air transport industry affected by business fluctuations (recessions, inflationary periods, etc.)?"

   The attached list of articles, books, and reports is a sample of the type of printed material currently available on the economics of air transportation. In addition to publications of this type, Mr. L may use the professional journals and other literature of the air transport industry and may obtain information by interviewing persons in positions of responsibility in the industry.

(D) Evaluation

Evaluation will be on-going as well as summative. Mr. L will meet with the Mentor at about three-week intervals (or as needed) and will keep in touch with the Mentor by mail and/or telephone. During such meetings and discussions, the Mentor will raise questions designed to determine whether or not Mr. L is correctly applying economic principles to his industry. The paper will be submitted to the Mentor section by section and will be evaluated in terms of accuracy and evidence of the understanding of economic principles and their practical applications. The Mentor will examine the work done in the STUDY GUIDE and check the results of the self-administered tests. The usual scholarly requirements for proper documentation, objectivity, and completeness will be employed in judging the paper.

Mr. L will be asked to evaluate his own learning at the end of the contract period.

READINGS RELATING TO THE ECONOMICS OF AIR TRANSPORTATION

Forbes, Richard M., "The Dilemma of a Big City's Airport," ATLANTA ECONOMIC REVIEW, July 1970.

Kiefer, Donald W., A LINEAR PROGRAMMING APPROACH TO AIRPORT CONGESTION. Purdue University, Paper No. 267, 1970.

Kruse, Thomas M., "Airlines: In the Throes of a Pinch," BUSINESS INQUIRY, San Diego State College, 1970-71.

Hendrix, Frank L., "The Airport and Airway Act of 1970," TENNESSEE SURVEY OF BUSINESS, Univ. of Tenn., August, 1970.

Mize, Jan L. and Edwin Ulveling, "The Demand for Domestic Airline Passenger Transportation," MISSISSIPPI VALLEY JOURNAL OF BUSINESS AND ECONOMICS, Louisiana State Univ., New Orleans, 1970 (Fall).

Jordan, William A., AIRLINE REGULATION IN AMERICA: EFFECTS AND IMPERFECTIONS. Baltimore: Johns Hopkins Press, 1971.

Warford, Jeremy J., PUBLIC POLICY TOWARD GENERAL AVIATION. Washington, DC: The Brookings Institution.

Air Transport Assn., AIR TRANSPORT ASSOCIATION OF AMERICA FACTS AND FIGURES. Washington, D.C.: Air Transport Assn.

Capron, William M., ed., TECHNOLOGICAL CHANGE IN REGULATED INDUSTRIES. Washington, D.C.: The Brookings Institution, 1971. (See A. Phillips on airlines.)

Miller, Ronald and David Sawers, THE TECHNICAL DEVELOPMENT OF MODERN AVIATION. New York: Praeger, 1970.

Campbell, H.S.; D.M. Landi and A.J. Rolfe, SYSTEMS FOR AIR TRANSPORTATION SERVING THE NEW YORK METROPOLITAN AREA, 1975-1980. Santa Monica, Calif.: The Rand Corporation, 1969.

Gronau, Reuben, THE VALUE OF TIME IN PASSENGER TRANSPORTATION: THE DEMAND FOR AIR TRAVEL. New York: Columbia Univ. Press for the NBER, 1970.

Kirkwood, T.F. and S.L. Katten, THE POTENTIAL OF V/STOL AIRCRAFT FOR PASSENGER TRAVEL IN THE NEW YORK REGION. Santa Monica, Calif.: The Rand Corp., 1969.

Landi, D.M., and A.J. Rolfe, A MODEL AND COMPUTER CODE FOR STUDYING ALTERNATIVE AIR PASSENGER PROCESSING STRATEGIES. Santa Monica, Cal.: Rand, 1969.

Stratford, A.H., AIR TRANSPORT ECONOMICS IN THE SUPERSONIC ERA. New York: St. Martin's Press, 1967.

Tipton, S.G., THE AIRPORT SITUATION. Washington: Air Transport Assn., 1967.

Locklin, D. P., ECONOMICS OF TRANSPORTATION. 7th ed. Homewood, ILL.: Irwin, 1972. (Chapters 33,34,35.)

Fruhan, W.E., THE FIGHT FOR COMPETITIVE ADVANTAGE: A STUDY OF THE UNITED STATES DOMESTIC TRUNK AIR CARRIERS. Boston, 1972.

Jordan, W.A., AIRLINE REGULATION IN AMERICA: EFFECTS AND IMPERFECTIONS. Baltimore, 1970.

Keeler, T.E., "Airline Regulation and Market Performance," BELL JOURNAL OF ECONOMICS. Autumn, 1972.

Straszheim, M.R., THE INTERNATIONAL AIRLINE INDUSTRY. Washington, 1969.

Air Transport Association of America, MAJOR U.S. AIRLINES ECONOMIC REVIEW AND FINANCIAL OUTLOOK, 1969-73. Washington,, June 1969.

U.S. Civil Aeronautics Board, HANDBOOK OF AIRLINE STATISTICS, 1971 Edition. Washington, 1972.

model of perfection. In fact, the "Evaluation" section is too vague.

The same approach can be used with almost any student. Mrs. "S", for example, is a nurse who wants to know more about the economics of the health care delivery system. Again, it was a simple matter of relating almost everything in a basic economics textbook to her field of interest. After studying the way in which the market allocates resources generally, she examined the allocation of health resources. To what extent does the market model apply to health care delivery? How are costs determined in health care delivery? How are the factors of production used? What is the demand for health care, and how does this differ from the demand for other services and goods? What does the supply side of the health care market look like? How does the concept of elasticity apply? How are health care facilities organized in both the private and public sectors? How is the health care delivery system affected by the business cycle? How has inflation affected the system? What is the role of government in health care delivery? How is health care related to economic growth both here and in other parts of the world? How is health care provided in our system as compared with nations with different economic systems? What labor problems exist in the health care system? How is the problem of inequalities in the distribution of income related to the health care system? These and many other questions can be used to tie the standard textbook principles and concepts to health care delivery.

It should be clear that this sort of thing can be encouraged

in a conventional classroom situation. Students can be asked to write term papers in which they examine their own career choices in the light of the economics they are learning. Are they preparing for jobs which are in great demand? Is the field one in which many jobs will be lost when the economy turns downward? What are the prospects in view of the long-run economic growth picture? How is this field affected by international economic events? What is the nature of labor-management relations in the field? In what way is government involved? What is it costing to prepare for employment in the field? Will the benefits exceed the costs?

Of course, not every student will want to do this sort of thing. We find that students are receptive, in such cases, to relating economics to current issues and problems. Everyone is affected by inflation, people are concerned about the impact of a business slump on their lives, the budget crises in New York City and New York State have caused some nail-biting in this area, and the energy problem has touched us all. Some of our students, then, have chosen to relate everything in the introductory textbook to current events. Mr. "T" would write the mentor every week (sometimes two or three times a week), giving his analyses of some current problem and indicating how that situation can be explained in relation to the textbook models. Thus, Mr. "T" applied the analytical tools of economics to such things as pollution, inflation, the energy shortage, food supply, international trade, crime, unemployment, and economic growth. The mentor responded to each of

his 34 letters (totalling 135 pages) with comments, probing questions, corrections (few were necessary), suggestions for additional readings, and the like. Another student, Mrs. "E," did a similar contract but went even further. She not only used the principles in the textbook to try to understand current economic problems, but went so far as to try to bring the book up to date! She also challenged some of the textbook theories that did not seem to explain such recent problems as "stagflation." (For additional ideas on using current issues in the introductory course, see Richard H. Leftwich and Ansel M. Sharp, "Syllabus for an 'Issues Approach' to Teaching Economic Principles," The Journal of Economic Education, Special Issue No. 1, Winter, 1974. For using the case study approach, see Rendings Fels, "The Vanderbilt-JCEE Experimental Course in Elementary Economics," The Journal of Economic Education, Special Issue No. 2, Winter, 1974.)

Particular Economics Subjects

In conventional colleges, students may take courses in such subjects as consumer economics, labor economics, economic geography, managerial economics, and the like. At Empire State these subjects can be studied through the learning contract, and can be tied directly to the student's work. A few examples follow.

Consumer economics was the subject of a contract written for Ms. "V." She had already had basic economics in a community college, along with several business courses. Ms. "V's" studies in economics and business had prepared her for employment in private industry, and she had held responsible positions in a large retail firm. She

was not compelled to be the primary "breadwinner" in her household, however, although she did want to be somewhat independent of her husband's income. Her major goal was to prepare for work that would somehow help poor people. It did not matter much whether she was paid for such work, as long as she could be effective in assisting low income people with their problems. Thus, she envisioned economics as being a practical tool for this purpose. Her first contract at ESC, then, was a two-month contract in consumer economics, calling for a study of basic principles and theories of economics as they apply to consumer issues and problems, and for the application of consumer economics to the personal financial problems of a particular group of people. For the basic theories she was to read such books as the following:

> Leland J. Gordon and Stewart M. Lee, Economics for Consumers, 6th ed. New York: Van Nostrand Reinhold, 1972.
>
> James F. Niss, Consumer Economics. Englewood Cliffs, N.J.: Prentice-Hall, 1974.
>
> Elizabeth Gilboy, A Primer on the Economics of Consumption. New York: Random House, 1968.

In addition, she was provided with a five-page bibliography of books on consumer economics and consumer issues, a four-page list of organizations interested in consumer affairs, and a three-page list of materials useful in teaching consumer economics. Because her contract called for her to help a group of low-income consumers with their personal financial problems, she was also asked to use the high school textbook Consumer Economic Problems, 8th ed., by Warmke, Wyllie, Wilson, and Eyster (Cincinnati: South-Western, 1971), and

James Canfield's Teaching a Course in Personal Economics, New York: The Joint Council on Economic Education, 1971. Thus, in addition to learning consumer economics herself, she was to be prepared to teach it to others.

During the period of the contract, Ms. "V" was to attend the meetings of a newly-formed organization for mothers who were not living with spouses. All had problems with their personal finances, and Ms. "V" became a consultant on consumer problems for this group. After establishing rapport with about six of the women, Ms. "V" wrote detailed case histories of their financial situations, discussed each case with the mentor during personal meetings with him, and then tried to apply her "book learnings" to each case. Each woman's budget was analyzed, and in each case Ms. "V" was able to help the individual to allocate her existing income more efficiently. Ms. "V" went further, however, and found ways for each woman to increase her income. These ranged from learning to make marketable products (such as flower arrangements) to obtaining civil service employment. The group as a whole was also aided by the kinds of practical information on personal finances that Ms. "V" compiled for their use. Ms. "V" wrote a formal paper in which she combined economic analysis with descriptions of these actual consumer problems, prepared several graphs and statistical tables, and set forth possible solutions to the financial problems of the group's members. She also wrote an article for a women's magazine in which she described the group and its goals, and explained some basic principles of consumer economics in terms the lay person could understand.

This student actually went far beyond the terms of the contract, doing much more work than was required, and started a study of the economics of poverty -- a subject that would become the basis of her next learning contract.

Economic geography made up the major portion of Mr. "R's" first contract. Before coming to ESC, Mr. "R" had earned two associate degrees at community colleges, one of which involved a heavy concentration in business and economics. His work experience included several years in a managerial position with a huge retail chain, and he had recently opened a small travel agency which was operated by his wife and one employee. He received the maximum amount of credit for prior learning, and thus needed only six months of fulltime work at ESC to complete a B.S. degree in business management. Having taken all of the liberal arts work needed for his degree, he could concentrate on subjects applying to his managerial job or to his travel agency. Obviously, the geography contract would have practical application to the latter.

The contract called for studies of physical, political, and cultural geography as well as economic, although the basic texts were standard college textbooks in economic geography. Mr. "R" was provided with a large collection of supplementary material, such as the 34-volume Life World Library Series, and he had access to a great deal of material produced by and for the travel industry. In addition to his readings, he was expected to attend several seminars sponsored by airlines and others in the transportation or tourist industries. He was to write a paper on each region of the

world (as defined by Wheeler, Kostbade, and Thomas in their book Regional Geography of the World), pointing out the physical, political, economic, and cultural geographic factors and how they might affect tourism. For example, he would note how climate and scenery (aspects of physical geography) would attract or repel tourists in each of the regions. Stressing economic geography, he would indicate such things as the way in which certain regional goods might attract tourists (such as the wines of France), how transportation facilities and other kinds of social overhead capital would attract or repel tourists, and how economic problems would affect tourism. For instance, a dollar devaluation in relation to the German mark would raise prices for American tourists in Germany. When Mr. "R" completed this contract he knew a great deal more about world geography, how economic factors affect tourism, and how to advise clients considering trips to any part of the world. He used what he had learned from the contract to initiate a series of travel newsletters in which very practical information was provided on trips to various parts of the world. Economic facts, principles, and concepts were used as analytical tools, enabling Mr. "R" to improve the service he was providing for his clients.

Labor economics, and such related subjects as labor law, labor relations, and labor history, are of interest to many ESC students. Some are union officials or simply rank-and-file members. Others are in positions requiring them to deal with unions. Mrs. "C" was employed as assistant to the personnel manager of a large public hospital. Thanks to her previous college work and her on-the-job learnings, she was awarded the maximum amount of credit for prior

learning. To complete a B.S. degree with a concentration in personnel management, she needed only six months of fulltime study at ESC. It was decided that her first contract would be an intensive three-month study of labor economics, labor history, and labor law. Mrs. "C" was responsible for dealing with the union that had only recently become bargaining agent for the hospital's employees, and neither she nor her super-ordinates had had much experience in labor relations. (Mrs. "C's" only previous experience with unions had been as a spokeswoman for clerical and secretarial workers attempting to form a union and obtain collective bargaining rights.) The practical value of this contract in her case is very clear.

For labor economics she was to use such standard texts as William Miernyk's The Economics of Labor and Collective Bargaining (Lexington: D.C. Heath, 1973) and James W. Robinson and Robert W. Walker, Labor Economics and Labor Relations (New York: The Ronald Press, 1973). Foster R. Dulles' Labor in America (New York: Thomas Y. Crowell, 1955) provided an overview of labor history in America, but this was supplemented by a large collection of works on the same subject. Most important for her immediate purposes, however, was the study of labor law -- particularly as the law applies to public employees. In addition to books on labor law in general, she was to use several works dealing with New York's Taylor Law and with the law and collective bargaining in public employment. The following are examples:

Aboud, Antone and Grace, The Right to Strike in Public Employment (Ithaca, N.Y.: Cornell University, 1974).

Hanslowe, Kurt L., The Emerging Law of Labor Relations in Public Employment (Ithaca, N.Y.: Cornell University, 1967).

Stieber, Jack, Public Employee Unionism. (Washington, D.C.: The Brookings Institution, 1973).

Zagoria, Sam, ed., Public Workers and Public Unions. (Englewood Cliffs, N.J.: Prentice-Hall, 1972).

Mrs. "C" was also to use material available in her own office, along with such recent articles as "Hospital Workers -- A Militant New Force in Organized Labor," U.S. News & World Report, December 30, 1974. She wrote papers on labor history in the United States, stressing the development of collective bargaining in public employment, and discussed the application of labor economics to her work situation with the mentor. As for labor law, she made intensive studies of the laws applying to public employees and how these might relate to the workers in her hospital. She had access to personnel files in the hospital, and wrote detailed case studies. For example, she noted how a case of a particular kind would have been handled before the passage of relevant legislation and how a similar case would be handled under current law. She noted how unionization had made a difference in labor-management relations in the hospital. Indeed, Mrs. "C" became the "authority" on labor relations in the institution, and quickly received a promotion as a result. This is a good example, too, of how some ESC students are able to work at fulltime jobs and still enroll as fulltime students -- their studies are so directly related to their job responsibilities, that one complements the other. (Nevertheless, the

student must be prepared for a great deal of work and study outside of normal working hours. Mrs. "C" spent evenings and weekends working on the contract and wri.ing her 137-page typewritten paper.)

Mr. "M" was on the opposite side of the fence. As an elected official in a newly formed union of public employees (this time, employees of the Federal government), Mr. "M" was interested in the same subjects as Mrs. "C" but from the union's point of view. Unlike Mrs. "C," Mr. "M" needed several contracts in the liberal arts. Ways were found, however, to provide him with liberal arts studies that could somehow be related to his deep interest in the trade union movement. For example, one contract was in American government. He read standard college textbooks on government, but paid particular attention to government's relations with labor. As one of his projects he made a study of lobbying as it is used by labor unions, learned the details of the laws applying to lobbies, noted the various labor lobbies and their techniques, and then wrote a manual for union officials giving them practical guidance on lobbying. In another liberal arts contract in literature, Mr. "M" will do research on the American labor novel. (Workers and unions have been the themes of some 200 novels published in the United States. For a partial list, see Virginia Prestridge, The Worker in American Fiction: An Annotated Bibliography. Champaign: University of Illinois, 1954.) Mrs. "E's" situation was similar to that of Mrs. "C's," except that she was in a supervisory position in an agency of the Federal government. Confronted by the

need to deal with a newly-formed union, Mrs. "E" used the same kinds of materials as Mrs. "C" except that she did not concentrate as much on New York State's labor legislation. As a practical project, she was to develop a course on labor law and labor relations which she would then teach to other supervisory personnel in her agency.

Money and banking was of major interest to Mr. "D", who held a responsible position as data processing manager with a large Long Island commercial bank. He had majored in business administration in a two-year college. Stating, "You are not a banker just because you work in a bank," Mr. "D" recognized that he would have to know more about banking in general if he expected to advance further in his field. The mentor assigned several standard textbooks in money and banking for a two-month contract on this subject, and had Mr. "D" work through Thomas Havrilesky's programmed textbook Money in the Economy (New York: Wiley, 1972). He was then to use his own bank as a case study to illustrate the general principles and problems learned through the readings. He was to write a paper dealing with questions of the following type:

> How does the Bank serve the immediate community?
>
> What role does it play in the U.S. banking system in general?
>
> How is the Bank affected by general economic developments, such as inflation and recession?
>
> How is it affected by regional economic trends and developments? ("Regional" refers to the New York SMSA.)
>
> How is the Bank affected by international economic developments, such as the oil embargo, floating exchange rates, the Euro-currency market?

In what way does the Bank exemplify the theories and principles set forth in the money and banking textbooks?

How has it been affected by "shocks" in the banking system, such as the failure of Franklin National Bank?

With primary source materials all around him, Mr. "D" had little difficulty applying the textbook studies to the realities of the world of money and banking.

Although students in conventional classes would not have some of the advantages enjoyed by the people whose work is described above -- for few are employed as bank officers, union officials, hospital administrators, and the like -- they could still relate their studies of these economic subjects to personal interests. A student planning to enter the medical or health field could study the economics of the health care delivery system. (There is already a large body of literature on this subject.) The young man or woman thinking of seeking employment in a particular type of industry or a specific firm could easily relate any or all of these subjects to that firm. In a course in money and banking, for example, a study might be made of the way in which the firm employs the services of banks and how it is affected by developments in monetary matters. Everyone is in some way affected by labor problems, so there is no need to study labor economics or labor relations entirely in an abstract way.

Specific Economic Problems

Many of Empire State's students are concerned about some specific economic problem. This may stem from an involvement in a related issue, or it may be an outgrowth of a study of economics in

general or a course (or contract) in economic problems.

Women in the economy is a subject that interests many students at this college. Over half our students are women, but many men are also aware of the fact of sex discrimination, the growing role of women in the labor force, and so on. Mr. "G," an executive in a large American corporation, decided to concentrate on "women's studies" in getting his B.S. degree. He had already had many formal courses in business and economics, plus years of successful service in high-level management. When Mr. "G" discovered that women in his plant were not being treated equally, he welcomed the opportunity to make this problem the focal point of one contract. Mr. "G" was expected to use his existing knowledge of economics, statistics, and business in analyzing the problem. He was to answer such questions as the following:

> What role is being played by women in the labor force and in the economy in general?
>
> What are the major problems facing women in the labor force?
>
> What effect does sex discrimination have upon the economy?
>
> What is being done about sex discrimination, and what further steps are needed?

In addition to a large collection of newspaper and magazine articles on this subject, Mr. "G" was provided with a bibliography of about 20 books and government reports, such as the following:

Lloyd, Cynthia B., ed., Sex, Discrimination, and the Division of Labor (New York: Columbia University,1975).

Lyle, Jerolyn R. and Jane Ross, Women in Industry (Lexington, Mass.: Lexington Books, 1973).

Madden, Janice F., The Economics of Sex Discrimination (Lexington, Mass.: Lexington Books, 1973).

Schwartz, Eleanor B., The Sex Barrier in Business (Atlanta: Georgia State University, 1971).

Tsuchigane, Robert and Norton T. Dodge, Economic Discrimination Against Women in the U.S.: Measures and Changes (Lexington, Mass.: Lexington Books, 1974).

The student was expected to go beyond a purely descriptive study of the problem, and to consider such things as the impact of discrimination on the GNP and on business firms. A formal paper was written for this phase of the contract work. Next, Mr. "G" was to make a study of legislation pertaining to women in the economy (or to discrimination generally), relying heavily upon primary source materials such as copies of the relevant laws. Armed with a thorough knowledge of the laws and with sound economic reasons for wanting to end discrimination, Mr. "G" then prepared a guide to legislation on discrimination and a plan for eliminating discrimination in the plant he manages. This was printed and distributed to all administrators responsible for personnel matters. Mr. "G's" superordinates at the national level were so favorably impressed with his guidebook that they have asked him to develop a plan that can be used nationwide. (Another part of this contract called for Mr. "G" to make a study of the contributions of women economists to economic theory. Admittedly, this was something of a "gimmick," but it did force him to review and expand upon his earlier studies of economic theory. In writing a paper on the contributions of such economists as Joan Robinson, he was naturally required to examine the development of economic thought in general.)

Several women have made studies similar to those undertaken

by Mr. "G," applying their findings to the particular industry or public institution in which they are employed. For a contract in basic principles of management, one woman analyzed the standard textbooks and materials in this field in terms of how they do and how they do not apply to her particular managerial position and how they fail to account for the differences based upon sex. (One of the books she read, although written by a woman, seemed to assume that all managers were male!) Another student in the health professions found that women are discriminated against both in terms of employment and in terms of gaining access to health care in her area. One part of her contract called for her to set up an organization to help women enter the health field and to obtain good health care at reasonable fees.

The problem of poverty was a major concern in Ms. "V's" second contract -- a problem she had dealt with in part in her first contract on consumer economics. To increase her knowledge of economic theory, she was expected to study standard works on welfare economics. She was provided with a list of books including such items as E. J. Mishan's Welfare Economics, 2nd. ed. (New York: Random House, 1969); Jan Tinbergen, et. al., Optimum Social Welfare and Productivity (New York: NYU Press, 1973); and James D. Smith's, The Personal Distribution of Income and Wealth (New York: Columbia University Press, 1975). Materials dealing directly with the problem of poverty were used extensively, such as Bruno Stein's On Relief: The Economics of Poverty and Public Welfare (New York: Basic Books, 1971) and Lester Thurow's The Economics of Poverty and

Racial Discrimination (New York: Joint Council on Economic Education, 1972).

Both through formal papers and through discussions with her mentor, Ms. "V" was expected to demonstrate her mastery of the relevant economic principles and theories. Two very practical projects were also required. In one, Ms. "V" made a thorough study of the welfare system in Suffolk County and wrote a manual for the use of actual or potential welfare clients. Written in a simple and interesting fashion, the manual could serve as a guidebook for poor people, spelling out their rights and responsibilities, describing the relevant laws, giving step-by-step accounts of how to obtain assistance under various programs, and so on. The second project dealt with the problem of housing for the poor -- particularly the elderly and poor black people. She studied the economics of housing (using the works of John F. Kain and others who have specialized in such things as housing market discrimination), and became knowledgeable about such housing legislation as The Housing and Community Development Act of 1974. She prepared a paper on the housing problem and used her knowledge to be of service to the Community Development Block Grant Program, helping to obtain adequate housing for poor people in a particular community in Suffolk County.

The energy problem was of interest to Mr. "T," an engineer with a major Long Island manufacturing firm. Mr. "T" had done exceptionally well in a contract in basic economics, had held managerial positions, had studied law, and possessed a knowledge of many fields. Although economics was to be the focal point of his

study of the energy problem, he would also draw upon science and engineering, political science, diplomacy, and any other discipline needed for a thorough analysis of this complex problem. Mr. "T" was provided with a large collection of books and materials on the energy problem, such as Roger L. Miller's The Economics of Energy (New York: William Morrow and Co., 1974), John C. Fisher, Energy Crises in Perspective (New York: Wiley, 1974), Sam H. Schurr, ed., Energy, Economic Growth, and the Environment (Baltimore: Johns Hopkins Press, 1972), and Helmut J. Frank and John J. Schanz, The Economics of the Energy Problem (New York: Joint Council on Economic Education, 1975).

In addition, Mr. "T" kept up-to-date on the problem through daily newspapers, news magazines, articles in professional journals, reports from government agencies, and the like. He wrote the mentor at least twice a week, so that an on-going dialogue occurred. The mentor would present him with questions and problems, challenge his previous statements, and send him additional material for analysis and comment. For example, he was sent the AFL-CIO Executive Council's 1975 statement on the energy problem along with a summary of Mobil Oil's position, and asked to compare and contrast the proposals, and to analyze them from the point of view of economic feasibility. He would also analyze proposed legislation, drawing upon his previous studies of economics, his knowledge of the scientific and engineering aspects, the political realities, and advanced economic principles provided by the mentor. He was asked to use cost-benefit analysis when considering proposals for dealing with the

energy problem, and he demonstrated an unusual ability to identify real costs that might be incurred by any proposed scheme. The mentor would sometimes steer him away from the immediate problem and ask for his comments on various economic concepts, such as input-output analysis and cost-benefit studies. For example, he was asked to "critique" portions of the book Cost Benefit and Cost Effectiveness: Studies and Analysis, edited by J. N. Wolfe (London: George Allen & Unwin, Ltd., 1973). He would be asked to study and respond to articles such as Hans H. Helbling and James E. Turley, "Oil Price Controls: A Counterproductive Effort," Federal Reserve Bank of St. Louis Review, November, 1975. The relationship between energy and growth was to be studied, and the "trade off" between energy supply and environmental damage taken into account. (For example, see Richard Lecomber, Economic Growth versus the Environment. New York: Halsted Press, 1975.) Aside from the fact that Mr. "T" is a "concerned citizen" with an interest in the energy problem in all its dimensions, his contract also had a very practical dimension. He is considering establishing a business in the solar energy field, and his contract studies should help him decide on the feasibility of such an enterprise.

These are but a few of the economic problems that Empire State College students find of interest. Surely, students in conventional colleges can find some current problem that affects them and that can be better understood through economic analysis. In experimenting with the case study approach at Vanderbilt University, Rendigs Fels used economic analysis in having his students study the problem of

campus parking!

Statistics

Statistics is not an easy subject to learn through independent study, and we often find that tutorial assistance must be provided by the mentor or someone hired especially for that purpose. Nevertheless, statistics can be an interesting and relevant subject, and can be a practical tool for the student. When Mr. "K" came to ESC he had already completed over two years of work at a conventional college, taking nearly all the business and economics subjects needed for a major in business administration. He had somehow escaped basic statistics, however, although he had taken several mathematics courses.

Although the mentor was satisfied that Mr. "K" had a mathematics background that would enable him to handle the operations required in basic statistics, he provided the student with Helen M. Walker's Mathematics Essential for Elementary Statistics (New York: Henry Holt, 1951) to be used for reference if needed. It should be noted that it was not the purpose of the contract to make a statistician of Mr. "K", but rather to enable him to make business decisions which rely upon statistical data and to learn the uses and limitations of statistics. We wanted him to know what can reasonably be expected of a statistician employed by a business firm, to be able to interpret statistical reports and research data, and to understand how to detect statistical fallacies and inadequacies.

First, Mr. "K" was required to read Stephen K. Campbell's Flaws and Fallacies in Statistical Thinking (Englewood Cliffs, N.J.:

Prentice-Hall, 1974), a delightful paperbound book of less than 200 pages that describes many statistical concepts in a humorous and interesting manner. It shows how statistics can be used and mis-used, and includes many examples drawn from the business world. This served to introduce statistics in a non-threatening way. While reading this book Mr. "K" was expected to identify similar examples of the use and mis-use of statistics in daily newspapers and news magazines. This proved to be an enjoyable and fruitful experience for him. Robert S. Reichard's The Figure Finaglers (New York: McGraw-Hill, 1974), is a hardcover book that could be used in much the same way. Next, Mr. "K" read Robert S. Reichard's The Numbers Game: Uses and Abuses of Managerial Statistics (New York: McGraw-Hill, 1972), which is more detailed and sober-sided than the Campbell book.

After this non-technical overview of statistics and how it is used in the business world, Mr. "K" was ready to begin the serious work of learning how to use some basic statistical concepts, from computing measures of central tendency to chi squares and regression analyses. First, Mr. "K" was to read and do all the exercises in the programmed textbook Business Statistics by Donald J. Koosis (New York: John Wiley, 1972). Finding that he needed review and reinforcement, the mentor had Mr. "K" work through another programmed text that covered the same concepts, Freeman F. Elzey's Business and Economic Statistics (Monterey, Calif.: Brooks-Cole Publishing Co., 1971). During personal meetings the mentor would discuss the concepts with the student to determine that he really

understood them and was not simply learning the operations in a rote fashion. As for immediate practical application, Mr. "K" considered ways in which statistical analysis might be used to improve the operations of the computer facility in which he was employed. Both in the personal meetings with the mentor and in a paper, he was asked to show how statistics can be used in various business situations, real or imaginary. In "let's pretend" sessions, the mentor would present him with imaginary statistical reports (such as a correlation analysis of the relationship between changes in temperature and changes in the sales of air conditioners in a given area) and ask him to indicate how an astute business manager would use the information, what questions he would raise of the statistician, etc. Thus, each concept was related to some business situation that exists in Suffolk County.

Another student studying basic statistics was Miss "O" who is also an employee of the College. The same materials were used in her case, but for practical application she made studies of enrollment trends, drop-out rates, and the like, considering whether or not changes during particular months were statistically significant, and the impact of such variables as sex and part-time or full-time status. Of course, she also had access to the research reports of the central administration of the college, which surely became more meaningful after she had studied statistics herself.

Business and Economic History

Students in need of further work in the liberal arts often attempt to relate these studies to their areas of concentration.

Mr. "L" was interested in little but tax accounting, for example, but did not object to a contract which included a study of the history of business in America, and a paper on the history of taxation in the United States. Mr. "K's" concentration is business management, and in a contract calling for a study of United States history in general, he wrote a paper on the history of the business cycle in the U.S. and examined the economic policies of the various presidents. Mr. "D's" contract in American business and economic history required the reading of standard textbooks, but then permitted him to make studies of particular business firms in the industry in which he is employed. His paper on those firms required that he not only describe their histories, but attempt to answer questions of the following type:

> What economic factors gave rise to these firms?
>
> What problems did they experience, and how did they solve them?
>
> How did general economic trends help (or hinder) the growth of the firms?
>
> How did these firms contribute toward the nation's economic development?
>
> How were they affected by the business cycle, and what did they do about it?
>
> In what ways was the development of the firms similar?
>
> In what ways did their development differ?
>
> What managerial principles are illustrated by the firms?
>
> What basic economic principles are illustrated?

Finally, Mr. "D" was to show what he had learned from this study that might be applied to management situations in his own firm.

Management

We have already noted a number of ways in which studies in management have been related to the student's particular situation. Because many of our business students are already in some sort of managerial position, or are employed in firms or institutions where there are opportunities for upward mobility, it is not difficult to combine the usual textbook studies with practical applications. Mrs. "N's" contract in personnel administration required her to read the third edition of Dale S. Beach's Personnel: The Management of People at Work (New York: Macmillan, 1975), and then to write a manual on personnel policies for day-care centers. Mrs. "N" manages a day-care center, has had some experience in running her own business, and hopes to be able to obtain a managerial position in private industry or in a government agency. She drew upon the basic principles set forth by Beach in preparing the manual, "Personnel Policies and Procedures for Day Care Centers of Suffolk County," which would certainly be valuable to any other person becoming involved in day-care center management. Ms. "L" also read Beach's text, plus two standard textbooks on managerial psychology, and wrote papers in which she described organizational psychology problems in the office of the community college in which she is employed.

Mr. "R" read several standard textbooks in industrial psychology and management, and wrote a paper on the ways in which the textbook concepts and principles apply to his specific managerial situation in a large retail firm. The textbook content was used as a practical

instrument to indicate possible ways of improving the supervisory function in his department. Mr. "R" showed how his situation differed from that set forth in the textbook models (such as those discussed by Peter Drucker in Management: Tasks, Responsibilities, Practices, New York: Harper & Row, 1974), and prepared detailed analyses of the managerial set-up in his firm. He conducted employee opinion surveys and discussed their implications for management. The effects of actual incidents and actions by certain managerial personnel on employee morale were set forth. Mr. "R" made changes that improved morale and efficiency in his department, and made suggestions to his superordinates that were eventually adopted for the whole plant.

For a contract in advertising and marketing, the busy Mr. "R" decided to do something practical for his travel agency. He read several books on advertising, marketing, and public relations, and attended a week-long seminar for travel agents. He extracted from the textbooks the advertising and marketing ideas that could be applied to the travel industry, and developed a scheme for promoting his own business. He developed a low-cost promotion plan that would provide maximum contact with potential clients. For example, he estimated that he would need to arrange an average tour for only two persons to cover the total money cost of the promotional scheme for one month. He took into account general economic conditions (the 1975 recession, for example) and such concepts as elasticity of demand. That is, he was aware of the probability that the sales of tours would change by a greater percentage than the change in

price, and accordingly planned to concentrate on low-cost tours. To offset the elastic demand factor, he decided to direct much of his direct-mail advertising to professional people such as medical doctors and dentists whose incomes are probably not affected greatly by a recession and thus represent a demand with a low coefficient of elasticity. Further, he developed a plan to capitalize on seasonal factors by setting up cut-rate tours for employees of firms which have "slack seasons" during those times of the year when the overall demand for tours is relatively light. In short, Mr. "R" used what he had learned about economics to create a plan that might well enable his small firm to survive a serious recession.

Accounting contracts often enable students to apply their learnings to work situations. Mr. "R" developed a bookkeeping and accounting system for his travel agency. Mrs. "J" is an administrator in a museum, and planned to establish a gift shop in the place. Needing little more than introductory accounting, bookkeeping, and business mathematics, she read and did the exercises in books of the following type:

Morton D. Bluestone, Accounting: A Self Instruction Guide to Procedures and Theory (New York: Collier, 1973)

Neal Margolis and N. Paul Harmon, Accounting Essentials (New York: John Wiley, 1972)

Elwin W. Midgett, An Accounting Primer (New York: New American Library, 1969)

Roger A. Golde, Thinking with Figures in Business (Reading, Mass.: Addison-Wesley, 1966).

Flora M. Locke, Business Mathematics (New York: John Wiley, 1972).

In addition, she made a study of the legal aspects of operating a gift shop in a non-profit organization, including taxation and auditing requirements. She wrote a paper explaining the relevant portions of the Internal Revenue Code and describing the rulings that have been based upon the laws applying to the sale and taxation of particular items usually sold in museum shops. (This proved to be far more complex than one would expect.)

Business law, finance, government and the economy, and many other subjects in the business and economics program can be related easily to some particular student need or interest. Let's not belabor the point. Furthermore, we attempt to encourage students to think analytically, and not simply to approach these subjects in a purely descriptive fashion, or to learn things by rote. For example, a contract in labor law should require the student to do much more than memorize the provisions of the Wagner Act, the Taft-Hartley Law, and so on. The student should look for trends, for the application of economic principles and legal theories, for philosophical problems relating to government's role in the economy, and so on. The better students raise difficult questions and even challenge the "laws" set forth in basic economic textbooks. ("In view of what the textbook says about the Phillips Curve and the 'job-price trade-off,' how do you explain the fact that the unemployment rate and the inflation rate are both increasing?" asked one student, for example.)

Finally, the reader must realize that we have described only a few cases, and that we have not gone into great detail on any

one of them. The above descriptions sometimes deal with only a portion of a given contract or project, and only hint at the kind of mentor-student interaction that usually occurs.

Evaluation and Research

As indicated earlier, a Digest and Evaluation (D&E) is written at the end of each contract period, briefly describing the learning activities and the materials used. It tells what the student learned, and what he or she failed to learn. Some evaluations include a formal paper-and-pencil test, but this is not too common. The student's papers and projects are evaluated by the mentor in the usual fashion (with attention to completeness, accuracy, proper scholarly procedures, and the like), and the face-to-face contacts between mentor and student provide for on-going as well as summative evaluations. Invariably, there is a final evaluation session in which the student's work is discussed, and a sort of oral examination is given. This is not necessarily a threatening situation in which the mentor fires hard questions at the student (although this does occur at times); it may take the form of a pleasant and relaxed discussion in which the mentor allows the student much freedom of expression. This may be superior to paper-and-pencil tests, in that the student is not "locked into" a rigid format, but may explain his or her learnings in detail, show that knowledge and understandings beyond that which the mentor expected were acquired, and so on. Indeed, mentors are often pleasantly surprised at the depth and

breadth of the knowledge acquired by the student -- a revelation that would not be forthcoming if an objective written test had been used exclusively. The student's ability to apply the textbook principles to actual situations also serves as an excellent test of understanding.

But, if the mentor is convinced that the goals of the contract were reached, does it follow that everyone else will accept the evaluation? The lengthy D&E -- sometimes five or more pages long (typewritten; single-spaced) -- is our substitute for a letter grade on a transcript. Understandably, overburdened graduate school admissions officials are not terribly happy about being required to wade through several long and detailed evaluation statements for a single student. They would much rather have a simple grade or grade point average, although a good D&E tells a great deal more about a student and what was learned. Yet, we have an excellent track record in getting our students admitted to graduate schools. Thus far, the reports on their performance in graduate programs have been highly positive. This may be explained by the fact that the students are mature and highly motivated to begin with, and that their work at ESC gave them good experience in working independently. The College is too young, however, to make sweeping claims about its effectiveness in preparing students for graduate work.

Hard-nosed researchers who ask us for proof of the effectiveness of our programs will not yet receive acceptable answers. We have not yet set up controlled experiments in which our students

are pre-tested and post-tested, and the results compared with those achieved by similar students in a conventional classroom situation. At this point, the problems we face in doing this kind of research appear to be insurmountable. As the College matures, and as our resources grow (if they do grow), we shall make the effort in the future. Meanwhile, we must rely upon our own somewhat biased and subjective impressions and upon research done by others.

Unfortunately, most of the research done by others does not seem to evaluate personalized instruction as we have defined it although the term "personalized system of instruction" or "PSI" is often used. Indeed, most researchers whose work has come to our attention appear to be evaluating self-paced or individualized instruction, as we define those terms. One possible exception is the study by Phillips and DePrano, listed below. The researchers claim that relating economics to each student's area of greatest interest or major field deepens his or her grasp of economics. Several have found that self-paced instruction is as effective as the conventional lecture-discussion method in improving student economic understanding as measured by formal tests. A review of several recent studies appears in the fall 1975 issue of The Journal of Economic Education (see Elisabeth Allison's "Self-Paced Instruction: A Review"). Problems with research design and adequacy of population samples raise questions about some of the research results, but it does seem safe to conclude that self-pacing can be as fruitful as traditional methods. Rendigs Fels has been

doing related research for several years at Vanderbilt University, and he recently concluded that "The students ... learned no more (and no less) than students in a comparable principles course taught by the conventional lecture method." (From his paper "The Principles Course," prepared for a conference at Western Kentucky University, October 18, 1975.) In his paper "Teaching Microeconomics at Williams Using the Personalized System of Instruction: An Evaluation," Thomas H. Tietenberg asserts that self-pacing did not produce superior test results, but that students in the experimental program proclaimed themselves to be more highly motivated, expressed greater appreciation for economics as a subject, were more stimulated to discuss economics in general conversation, rated the educational value of the course higher, and preferred self-pacing to the traditional lecture approach. (The differences between the experimental and control groups were statistically significant at the 95 percent level of confidence.) There is some evidence that student retention, as measured by complex application type questions on the TUCE, is greater for those using a "self-instructional method." (See Eleanor Craig and James O'Neill, "The Predictability of Retention in Economics," Newark: The University of Delaware, 1975.) Craig and O'Neill also maintain that "When post-TUCE performance and verbal ability were discounted, attitudinal interest was the next most important variable in predicting retention results." Evaluating a set of commercially-produced self-instructional materials, John Soper and Richard Thornton concluded that students using them did <u>not</u>

learn as much as those in conventional classroom situations. ("Self-Paced Economics Instruction: A Large-Scale Disaggregated Evaluation," DeKalb: Northern Illinois University, 1975.) Clearly, more research is needed on all aspects of individualized, self-paced, or personalized instruction. We plan to produce a publication summarizing the existing research. Meanwhile, some readers may be interested in the appended list of such research.

RESEARCH IN INDIVIDUALIZED, SELF-PACED, AND PERSONALIZED INSTRUCTION IN ECONOMICS

Allison, Elisabeth, Self-Paced Instruction in Introductory Economics. Cambridge: Harvard University, 1974. Discussion Paper No. 368, Harvard Institute of Economic Research.

_____, "Self-Paced Instruction: A Review," The Journal of Economic Education, Fall, 1975.

Attiyeh, Richard E.; G.L. Bach; and Keith Lumsden, "The Effectiveness of Learning in Economics," The American Economic Review, May, 1965, pp. 549-555.

_____, "The Efficiency of Programmed Learning in Teaching Economics: The Results of a Nationwide Experiment," The American Economic Review, May, 1969, pp. 217-223.

Bach, G.L., "A Further Note on Programmed Learning in Economics," The Journal of Economic Education, Fall, 1969, pp. 56-59.

Billings, Donald B., P.S.I. versus the Lecture Course in the Principles of Economics: A Quasi-Controlled Experiment. Boise: Boise State University, 1974. Unpublished paper.

Bolch, Ben; Rendigs Fels; and Robert Uhler, An Experiment with Self-Paced Instruction. Nashville: Vanderbilt University, 1972. Unpublished paper.

Bostow, Diane; and G. Hartley Mellish, The Effect of Remediation on the Performance of Principles of Economics Students Using Programmed Materials. Tampa: University of South Florida, 1974. 16 pp.

Buckles, Stephen G., and Marshall E. McMahon, "Further Evidence on the Value of Lectures in Elementary Economics," The Journal of Economic Education, Spring, 1971, pp. 138-141.

Calvin, Allen D., "Programmed Instruction in Economics," in Keith Lumsden, editor, New Developments in the Teaching of Economics. Englewood Cliffs, N.J.: Prentice-Hall, 1967, pp. 59-64.

Craig, Eleanor D., and James B. O'Neill, The Advantages of a Humanistic Approach in Teaching College Economics. Newark: The University of Delaware.

_____, The Predictability of Retention in Economics. Newark: The University of Delaware, 1975. 21 pages. Unpublished paper.

Darnton, Donald C., "Programmed Learning-Policy Analysis: An Experiment in Teaching Principles of Economics. The Journal of Economic Education, Fall, 1971, pp. 32-35.

Fels, Rendigs, and Dennis R. Starleaf, "Controlled Experiments in Teaching Techniques," Southern Economic Journal, July, 1963, pp. 68-73.

Fels, Rendigs, The Principles Course. Nashville: Vanderbilt University, 1975. 11 pages. Unpublished paper.

Fusfeld, Daniel R., and Gregory Jump, "An Experiment with Programmed Instruction in Economics," Southern Economics Journal, January, 1966, pp. 353-56.

Ginman, Peter J. and Robert W. Haseltine, Teaching Basic Macroeconomics via the Audio-Visual-Tutorial Carrel. Geneseo, New York: State University College, 1972. 11 pages. Unpublished paper.

Gordon, Sanford, "Optimizing the Use of Televised Instruction," The Journal of Economic Education, Fall, 1969, pp. 46-50.

Grubel, Herbert G., and Allen C. Kelley, TIPS and the Use of Computers in Teaching Economics: The Experience of Simon Fraser. Durham, N.C.: Duke University, 1974. Unpublished paper.

Hanni, Eila, The Grade Incentive as a Systematic Variable in the Comparison of Conventional vs. Behavior Managed Learning of Principles of Economics. Tampa: University of South Florida, 1975. Unpublished paper.

Havrilesky, Thomas, "A Test of the Effectiveness of Teaching Money and Banking by Programmed Instruction," The Journal of Economic Education, Spring, 1971, pp. 151-154.

Kelley, Allen C., "The Economics of Teaching: The Role of TIPS," in Keith Lumsden, ed., Recent Research in Economic Education, Englewood Cliffs, N.J.: Prentice-Hall, 1970, pp. 44-66.

_____, "An Experiment with TIPS: A Computer-Aided Instructional System for Undergraduate Education," The American Economic Review, May, 1968, pp. 446-457.

_____, "TIPS and Technical Change in Classroom Instruction," The American Economic Review, May, 1972, pp. 422-428. (For similar articles by Kelley on TIPS, see The Journal of Economic Education, Spring, 1973, and George G. Dawson, editor, Economic Education Experiences of Enterprising Teachers. Vol. X. New York: The Joint Council on Economic Education, 1973.

Lumsden, Keith, "The Effectiveness of Programmed Learning in Elementary Economics," The American Economic Review, May, 1967, pp. 652-659.

_____, "Technological Change, Efficiency, and Programming in Economic Education," in Keith Lumsden, editor, New Developments in the Teaching of Economics. Englewood Cliffs, N.J.: Prentice-Hall, 1967, pp. 27-58.

McConnell, Campbell, and Charles Lamphear, "Teaching Principles of Economics without Lectures," The Journal of Economic Education, Fall, 1969, pp. 20-32.

McHaney, John H., An Experimental Study in the Use of Programmed Instructional Materials in Business and Economic Statistics I at Auburn University. Ed.D. study. Auburn, Alabama: Auburn University, 1969. 97pp. (Microfilm #70-9111.)

McIntyre, Charles J., An Application of the Principles of Programmed Instruction to a Televised Course in College Economics. University of Illinois Press, 1966. Also see Philip W. Tiemann, Donald W. Paden, and Charles J. McIntyre, same title, Washington, D.C.: U.S. Office of Health, Education, and Welfare, 1966.

Maurizi, Alex, "Programmed Learning and the Retention of Knowledge," in Arthur L. Welsh, editor, Research Papers in Economic Education, New York: Joint Council on Economic Education, 1972.

Mellish, G. Hartley, and Diane Bostow, The Experimental Analysis of Learning Behavior in Principles of Economics. Tampa: University of South Florida, 1975. 10pp. + appendix.

Mellish, G. Hartley; Diane Bostow; Nick Mystic; and Darrel E. Bostow, A Behavioral Approach to the Teaching of Principles of Economics. Tampa: University of South Florida.

Newton, Jan M., and Fred J. Abraham, An Exploratory Study of the Effectiveness of Alternative Instructional Procedures in the Teaching of the Principles of Economics. Eugene: University of

O'Connor, Dennis J., "Personalized System of Instruction: An Alternative to the Lecture Format," Journal of Financial Education, Fall, 1974, pp. 5-20.

O'Connor, William C., A Pilot Study on the Use of Programmed Instruction in the Teaching of Intermediate Microeconomics. Ph.D. study. Boulder: University of Colorado School of Education, 1974, 200pp.

Paden, Donald W., and M. Eugene Moyer, "The Relative Effectiveness of Three Methods of Teaching Principles of Economics," The Journal of Economic Education, Fall, 1969, pp. 33-45.

Petr, Jerry L., Experimental Use of "PSI" or the "Keller Plan" in Principles of Economics. Lincoln: University of Nebraska, 1974. Unpublished paper.

Phillips, E. Bryant and Michael DePrano, Economics Honors Section and Introduction to Economics. Los Angeles: University of Southern California, 1968 and continuing. (Not a paper -- on-going experimentation.)

Porter, Richard L., "An Experiment in Multi-paced Instruction for the Basic Economics Course," in George G. Dawson, editor, Economic Education Experiences of Enterprising Teachers, Vol. IX. New York: Joint Council on Economic Education, 1972.

Saunders, Phillip, A Comparison of Simulation with Programmed Workbook in Teaching Supply and Demand. (Title supplied by compiler of bibliography.) Pittsburgh: Carnegie-Mellon University, 1969. (Study described in George G. Dawson, "Recent Research in Economic Education," in George G. Dawson, editor, Economic Education Experiences of Enterprising Teachers, Vol. 7, New York: Joint Council on Economic Education, 1970, pp. 101-102.

Selim, Mohamed, The Effectiveness of the Audio-Tutorial Approach to Learning in the Introductory Economics Courses in Comparison with the Conventional Approach. St. Paul, Minn.: College of St. Thomas, 1973. Unpublished paper.

Soper, John C. and Richard M. Thornton, "Individualized Economics Instruction: A Large-Scale Evaluation," Working Papers in Economics. DeKalb: Northern Illinois University, 1975.

Soper, John C., On the Use of Programmed Instruction in Large Lecture Courses. Columbia: University of Missouri, 1972. 11 pp. Unpublished paper.

Soper, John C. and Richard M. Thornton, Self-paced Economics Instruction: A Large-scale Disaggregated Evaluation. DeKalb: Northern Illinois University, 1975, 27pp. Unpublished paper.

Spector, Lee C., "Personalized System of Instruction and Its Use in Principles of Macroeconomics at the State University College in Buffalo," in George G. Dawson, editor, Economic Education Experiences of Enterprising Teachers, Vol. 12. New York: Joint Council on Economic Education, 1975, pp. 109-116.

Stevens, C.M., "Reed's Experiment with Out-of-Class Periods in the Elementary Economics Course," in K.A. Knoph and J.H. Stauss, editors, The Teaching of Elementary Economics. New York: Holt, Rinehart and Winston, 1960, pp. 104-119.

Streifford, David M., Programmed Learning in Elementary Economics Courses: An Experiment and Evaluation. St. Louis, Missouri: Forest Park Community College, 1971, 9pp. Unpublished paper.

Tiemann, Philip W.,; Donald W. Paden; and Charles J. McIntyre, see McIntyre, above.

Tietenberg, Thomas H., A Comparative Analysis of the Personalized System of Instruction with the Lecture Method in Terms of Five Alternative Output Measures. Williamstown, Mass.: Williams College, 1974. 22pp. Unpublished paper.

_____, "Teaching Microeconomics at Williams Using the Personalized System of Instruction: An Evaluation," in James Johnston, editor, Behavior Research and Technology in Higher Education (Springfield: Charles C. Thomas, 1974).

Tolles, N., Arnold and Peter J. Ginman, "Using an Audiovisual-Tutorial Process in Macroeconomics," Journal of Economic Education, Fall, 1974, pp. 57-58. (Revision of Ginman and Haseltine, listed above.)

Turner, Raymond F., The Sterling Institute Program, Another Experience. Arnold, Md.: Anne Arundel Community College, 1975. Unpublished paper.

Van Metre, Dale, Principles of Learning and Introductory Economics: A Discussion and Experiment. Ogden, Utah: Weber State College, 1974. 21pp. Unpublished paper.

Weidenaar, Dennis, "The Effect of Programmed Instructional Materials and Other Factors on Performance in the Introductory Economics Course," in Arthur L. Welsh, editor, Research Papers in Economic Education, New York: Joint Council on Economic Education, 1972. (Also see his unpublished paper, An Experiment in Programmed Instruction in the Introductory Economics Course, Lafayette, Indiana: Purdue University, 1970.

LONG ISLAND LEARNING CENTER
EMPIRE STATE COLLEGE
STATE UNIVERSITY OF NEW YORK
P.O. BOX 130
OLD WESTBURY, NEW YORK 11568
TELEPHONE: 516 997-4700

STAFF OF THE CENTER FOR BUSINESS
AND ECONOMIC EDUCATION

Director

George G. Dawson, Professor of Economics and Acting Dean

Associate Director

Donald K. Park, Assistant Professor of Business and Economics

Professional Staff

Ralph F. Baldwin, Professor of Business and the Humanities

Frank Fischer, Instructor in Economics and Public Administration

Raphael O. Lewis, Assistant Professor of Business and Economics

Elizabeth H. Steltenpohl, Associate Professor of Education

Jeffrey Sussman, Instructor in Economics

Rhoada Wald, Professor of Education and Acting Associate Dean

Secretary

Sandra Scharf

Note: While the persons listed above are most directly involved in economics and education, all members of the faculty are invited to participate in Center projects and programs in accordance with their interests. For example, faculty members in the general area of health sciences have read manuscripts on the economics of health.